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METHOD AND APPARATUS FOR RESTAURANT ORDERING AND RESERVATIONS

BACKGROUND OF THE INVENTION

1. Technical Field:

The present invention relates generally to an improved data processing system and in particular to a method and apparatus for processing data. Still more particularly, the present invention relates to a method, apparatus, and computer instructions for making restaurant reservations and ordering.

2. Description of Related Art:

In today's times, most people eat out at restaurants on a regular basis. In fact, many people go out to eat one or more times each week. When going to popular restaurants, a customer most often waits in line for a table. This wait may vary from a few minutes to a few hours depending on the popularity of the restaurant. Many restaurants allow customers to make reservations and even pre-order food to avoid wait times.

Making reservations and ordering food generally requires a telephone call. This process is a manual one, requiring the customer to talk to a reservationist or other person at the restaurant to make the arrangements. Often times, a customer would like to tell the person on the telephone at the restaurant that they want their usual table or order when they have been to that particular restaurant a numbers of times. This situation

occurs because the usual person that they talk to may not be the one to answer the phone or may not be available. The customer must then go into detail with the person making the arrangements at the restaurant their preferences for tables or ordering. Further, in some cases, the customer may be placed on hold. Other times, the personnel at the restaurant may be unable to answer the phone and the customer receives a recorded message. These types of situations are frustrating and take time for a user wishing to make reservations. It would be advantageous to have an improved method, apparatus, and computer instructions for making reservation arrangements.

SUMMARY OF THE INVENTION

The present invention provides a method, apparatus, and computer instructions for making reservations or placing orders. A wireless hot spot location is provided in which reservations can be made with a plurality of vendors through the wireless hot spot. A determination is made as to whether a user desires to make a reservation with a selected one of the plurality of vendors in response to receiving a user input from a wireless device in communication with the wireless hot spot. User preferences associated with the user is retrieved in response to a determination that the user desires to make the reservation. The reservation is made using the user preferences.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

Figure 1 is a network data processing system in which the present invention is implemented;

Figure 2 is a block diagram of a data processing system that may be implemented as a server in accordance with a preferred embodiment of the present invention;

Figure 3 is a block diagram illustrating a data processing system in which the present invention may be implemented;

Figure 4 is a diagram of a wireless device in the form of a personal digital assistant (PDA) in accordance with a preferred embodiment of the present invention;

Figure 5 is a diagram illustrating components used in making reservations through wireless hot spot locations in accordance with a preferred embodiment of the present invention;

Figure 6 is a flowchart of a process for making a reservation in accordance with a preferred embodiment of the present invention;

Figure 7 is a flowchart of a process for making a reservation in accordance with a preferred embodiment of the present invention;

Figure 8 is a flowchart of a process for generating a reservation in accordance with a preferred embodiment of the present invention; and

Figure 9 is a flowchart of a process for making a reservation for user by vendor in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the figures and in particular with reference to **Figure 1**, a network data processing system is depicted in which the present invention is implemented. Network data processing system **100** includes network **102**, which is the medium used to provide communications links between various devices and computers connected together within network data processing system **100**. Network **102** may include connections, such as wire, wireless communications links, or fiber optic cable.

In the depicted example, server **104** is connected to network **102**. In addition, clients **106** and **108** are connected to network **102**. These clients may be, for example, personal computers or network computers. Further, clients **110** and **112** are connected to network **102**. In the illustrative example, these two clients are connected through wireless communications links and are wireless devices. In particular, clients **110** and **112** are personal digital assistants (PDA). Server **104** in this example may provide data, such as boot files, operating system images, applications, web pages, and other information to clients **106** and **108**. Network data processing system **100** may include additional servers, clients, and other devices not shown. For example, other devices may include routers, switches, or wireless access points to provide for the routing and transmission of data within network **102**.

In the depicted example, network data processing system **100** is the Internet with network **102** representing a world wide collection of networks and gateways that use the transmission control protocol/internet protocol (TCP/IP) suite of protocols to communication with one another. Of course, network data processing system **100** also may be implemented as a number of different types of networks, such as, for example, an intranet, a local area network (LAN), or a wide area network (WAN). Network data processing system **100** in **Figure 1** is intended as an illustrative embodiment and not as an architectural limitation for the present invention.

Within network **102**, hot spots may be provided through various wireless access points to generate hot spot locations. In this manner, clients **110** and **112** may access network **102** when within a hot spot location. In these examples, a hot spot location is a location in which a wireless device is in proximity to a wireless access point such that communication or exchange of data may be made with that wireless access point. The present invention in the illustrative embodiments allow for reservations to be generated through wireless devices, such as clients **110** and **112** when these clients are within selected hot spot locations. These reservations may be made through communications where the server, such as server **104**, or through clients **106** and **108**, when these devices are used by businesses to obtain information for generating reservations using the mechanism of the present invention and the illustrative embodiments.

Referring to **Figure 2**, a block diagram of a data processing system that may be implemented as a server, such as server **104** in **Figure 1**, is depicted in accordance with a preferred embodiment of the present invention. Data processing system **200** may be a symmetric multiprocessor (SMP) system including a plurality of processors **202** and **204** connected to system bus **206**. Alternatively, a single processor system may be employed. Also connected to system bus **206** is memory controller/cache **208**, which provides an interface to local memory **209**. I/O bus bridge **210** is connected to system bus **206** and provides an interface to I/O bus **212**. Memory controller/cache **208** and I/O bus bridge **210** may be integrated as depicted.

Peripheral component interconnect (PCI) bus bridge **214** connected to I/O bus **212** provides an interface to PCI local bus **216**. A number of modems may be connected to PCI local bus **216**. Typical PCI bus implementations will support four PCI expansion slots or add-in connectors. Communications links to clients **106-112** in **Figure 1** may be provided through modem **218** and network adapter **220** connected to PCI local bus **216** through add-in boards.

Additional PCI bus bridges **222** and **224** provide interfaces for additional PCI local buses **226** and **228**, from which additional modems or network adapters may be supported. In this manner, data processing system **200** allows connections to multiple network computers. A memory-mapped graphics adapter **230** and hard disk **232** may also be connected to I/O bus **212** as depicted, either directly or indirectly.

Those of ordinary skill in the art will appreciate that the hardware depicted in **Figure 2** may vary. For example, other peripheral devices, such as optical disk drives and the like, also may be used in addition to or in place of the hardware depicted. The depicted example is not meant to imply architectural limitations with respect to the present invention.

The data processing system depicted in **Figure 2** may be, for example, an IBM eServer pSeries system, a product of International Business Machines Corporation in Armonk, New York, running the Advanced Interactive Executive (AIX) operating system or Linux operating system.

With reference now to **Figure 3**, a block diagram illustrating a data processing system is depicted in which the present invention may be implemented. Data processing system **300** is an example of a client computer, such as client **106** or client **108** in **Figure 1**. Data processing system **300** employs a peripheral component interconnect (PCI) local bus architecture. Although the depicted example employs a PCI bus, other bus architectures such as Accelerated Graphics Port (AGP) and Industry Standard Architecture (ISA) may be used. Processor **302** and main memory **304** are connected to PCI local bus **306** through PCI bridge **308**. PCI bridge **308** also may include an integrated memory controller and cache memory for processor **302**. Additional connections to PCI local bus **306** may be made through direct component interconnection or through add-in boards. In the depicted example, local area network (LAN) adapter **310**, SCSI host bus adapter **312**, and expansion bus interface **314** are connected to PCI local bus **306** by direct

component connection. In contrast, audio adapter **316**, graphics adapter **318**, and audio/video adapter **319** are connected to PCI local bus **306** by add-in boards inserted into expansion slots. Expansion bus interface **314** provides a connection for a keyboard and mouse adapter **320**, modem **322**, and additional memory **324**. Small computer system interface (SCSI) host bus adapter **312** provides a connection for hard disk drive **326**, tape drive **328**, and CD-ROM drive **330**. Typical PCI local bus implementations will support three or four PCI expansion slots or add-in connectors.

An operating system runs on processor **302** and is used to coordinate and provide control of various components within data processing system **300** in **Figure 3**. The operating system may be a commercially available operating system, such as Windows XP, which is available from Microsoft Corporation. Instructions for the operating system and applications or programs are located on storage devices, such as hard disk drive **326**, and may be loaded into main memory **304** for execution by processor **302**.

Those of ordinary skill in the art will appreciate that the hardware in **Figure 3** may vary depending on the implementation. Other internal hardware or peripheral devices, such as flash read-only memory (ROM), equivalent nonvolatile memory, or scanner, and the like, may be used in addition to or in place of the hardware depicted in **Figure 3**. Also, the processes of the present invention may be applied to a multiprocessor data processing system.

The depicted example in **Figure 3** and above-described examples are not meant to imply architectural limitations. For example, data processing system **300** also may be a notebook computer or hand held computer in addition to taking the form of a PDA. Data processing system **300** also may be a kiosk or a Web appliance.

Turning now to **Figure 4**, a diagram of a wireless device in the form of a personal digital assistant (PDA) is shown in accordance with a preferred embodiment of the present invention. PDA **400** is an example of a PDA, such as wireless client **110** or wireless client **112** in **Figure 1**. PDA **400** includes processor **402** and main memory **404** connected to bus system **406**. Further, PDA **400** also includes audio adapter **408**, graphics adapter **410**, touch screen/stylus adapter **412**, transceiver **414**, and storage **416** connected to system bus **406**.

Audio adapter **408** and graphics adapter **410** provide an interface for the user to hear and see information. Touch screen/stylus adapter **414** allows the user to interact with PDA **400**. This particular component allows the user to use a stylus to input data into a touch screen display on PDA **400**.

Processor **402** executes instructions stored in main memory **404** to provide the process and function of the present invention. Storage **416** provides for additional storage of data and applications. Storage **416** may take various forms, such as, for example, a flash memory. This flash memory in the illustrative embodiments may be, for example, a memory stick, a secured digital (SD) card, a CompactFlash card, or SmartMedia card. Transceiver **414**

provides for sending and receiving data through a wireless communications link.

An operating system runs on processor **402** and is used to coordinate and provide for control of various components within PDA **400** and **Figure 4**. The operating system may be, for example, a commercially available operating system, such as Windows Mobile, which is available from Microsoft Corporation. Instructions for the operating system and applications or programs are located on storage **416** in these examples. These instructions may be loaded into main memory **404** for execution by processor **402**.

Those of ordinary skill in the art will appreciate that the hardware in **Figure 4** may vary depending on the implementation. Other internal hardware or peripheral devices, such as additional storage in the form of flash read only memory (ROM) or equivalent non-volatile memory may be used in addition or in place of the hardware illustrated in **Figure 4**.

Turning next to **Figure 5**, a diagram illustrating components used in making reservations through wireless hot spot locations is depicted in accordance with the preferred embodiment of the present invention. In this example, hot spot location **500** is provided through wireless access point (WAP) **502**. Wireless client **504** is said to be within hot spot location **500** when client **504** is able to establish a communications link with wireless access point **502**, which forms the hot spot in these examples. In this manner, wireless client **504** is able to exchange data with server process **506**. Server process

506 may be located on data processing system, such as data processing system 200 in **Figure 2**.

The present invention provides a method, apparatus, and computer instructions for making reservations with a vendor. In these illustrative embodiments, the vendor takes the form of a restaurant. Of course, other vendors such as a bowling alley, reservation service, or a movie theater may be provided as vendors. The mechanism of the present invention provides for one or more hot spot locations in which the user may contact a vendor to make a reservation. With restaurants, the user also may send food orders in from the hot spot location without having to call and verbally communicate with the vendor or actually enter the active premises of the vendor.

In this manner, users may generally make reservations and send in orders without having to call the vendor or the active premises of the vendor. Wireless client 504 may contact only selected vendors in hot spot location 500. Reservations for these selected vendors may be sent to business client processes 508 and 510 by server process 506. These client processes may be located on a data processing system, such as data processing system 300 in **Figure 3**. These client processes may be located at different vendors in these illustrative embodiments.

In particular, a user entering hot spot location 500 with wireless client 504 may receive a list of available vendors. This list may be presented using a browser and hypertext markup language (HTML) or web pages presented on wireless client 504. This list may originate from

server process **506** in these examples. Further, when in hot spot location **500**, the user may be unable to contact other vendors than those set up through server process **506**.

In this manner, different vendors may purchase "listings" for different hot spot locations. A reservation request may be made with one of the vendors by selecting that vendor from the list at wireless client **504**. This selection is sent back to server process **506**, which sends the reservation information to business client process **508** or business client process **510** depending on the vendor selected by the user. In this manner, a reservation may be made between a user and a vendor from hot spot location **500**.

The reservation request generated by wireless client **504** may include various user preferences. These preferences may be obtained from preferences **512** located within wireless client **504**. User preferences are the selections made by a user for various vendor items or services. In many cases, these user preferences may be habitual selections that may be normally made or requested for a particular vendor. These user preferences may include, for example, the date for the reservation, the time for the reservation, the number of persons, a preferred table location, and even one or more orders. When this request is received at a business client process, such as business client process **508**, the request is processed to determine whether the different preferences of the user can be met. If all of the preferences are met, then a confirmation is returned to

wireless client **504**. If not all the preferences can be met, then reservation details are returned to wireless client **504**.

For example, if the time requested by the user cannot be met, an alternative time may be presented to the user in these reservation details. When the user receives reservation details at wireless client **504**, the user may choose to accept the reservation and at that time, the acceptance is sent back to business client process **508**. In response, a confirmation of the reservation is returned to wireless client **504**. If the user does not accept these details, a cancellation message is returned to business client process **508**. At that time, the user wireless client **504** may choose to make another reservation with slightly different preferences or select a different vendor from the list.

Further, the different user preferences may be stored remotely from wireless client **504** depending on the particular embodiment. For example, user preferences may be stored within user database **514** in the data processing system at which server process **506** executes. In this manner, the user is able to make reservations and even generate orders without having to call the vendor directly.

Turning now to **Figure 6**, a flowchart of a process for making a reservation is depicted in accordance with the preferred embodiment of the present invention. The process illustrative in **Figure 6** may be implemented in a wireless client such as wireless client **504** in **Figure 5**.

The process begins by detecting a wireless connection (step **600**). The wireless connection occurs when the wireless device is within proximity of a hot spot such that a communications link may be established with the hot spot.

Thereafter, a contact list is received (step **602**). This contact list in these examples is a list of vendors that is provided through a server process, such as server process **506** in **Figure 5**. Next, a determination is made as to whether a user input selecting a vendor has been received (step **604**). If a user input selecting a vendor has been received, the reservation is then made (step **606**) with the process terminating thereafter. Otherwise, a determination is made as to whether the user input is to exit the listing (step **608**). In step **608** the user may move out of the hotspot causing an exit from the list. If the user input exits the listing, the process terminates. Otherwise, the process returns to step **604**, where the process continues until the user selects a vendor or until the user moves out of range of the hotspot.

Turning next to **Figure 7**, a flowchart of a process for making a reservation is depicted in accordance with a preferred embodiment of the present invention. The process illustrated in **Figure 7** may be implemented in a wireless client, such as wireless client **504** in **Figure 5** this flowchart is a more detailed description of (step **606**) in **Figure 6**.

The process begins by retrieving user preferences (step **700**). This step may involve retrieving the user

preferences locally from within the wireless client or those preferences may be retrieved from a remote location, such as user database **514** in **Figure 5**. Then, a reservation request is sent with the preferences to the vendor selected by the user (step **702**). Thereafter, a determination is made as to whether a confirmation for the reservation has been received (step **704**). If a confirmation has been received, the process terminates. In this instance, all of the user preferences are available at the vendor.

Otherwise, reservation details are received from the vendor (step **706**). These details include information, such as, for example, the date and time of the reservation, the number of persons for the reservation, a smoking preference, and orders that may be filled. When reservation details are received without a confirmation from the vendor, one or more preferences cannot be met by the vendor. For example, if the user requests a table for 4 at 7:00 p.m. the reservation details may be for a table for 4 at 7:15 p.m. At that time, a determination is made as to whether the reservation is to be confirmed (step **708**).

If the user decides to accept the reservation details, then an acknowledgement is sent (step **710**). Thereafter, a confirmation of these reservation details is received (step **712**) with a process terminating thereafter. This confirmation may include information, such as information to update a calendar and a to-do list with the reservation. Further, this information may

include an update for the user's address book with the phone number and address of the restaurant.

With reference again to (step **708**), if the user does not confirm the reservation, a rejection of the reservation details is returned to the vendor (step **714**) with the process terminating thereafter. At this time, the user may select another vendor or resend a different request with different preferences depending on the user's wishes.

With reference next to **Figure 8**, a flowchart of a process for generating a reservation is depicted in accordance with the preferred embodiment of the present invention. The process illustrated in **Figure 8** may be implemented in a wireless client, such as wireless client **504** in **Figure 5**. The process illustrated in **Figure 8** is an alternative embodiment to the process illustrated in **Figure 7**. This process allows a user to select options while making a reservation request.

The process begins by receiving reservation options (step **800**). These options are displayed to the user (step **802**). Then user input is received selecting options (step **804**). These options may include, for example, seating availability for certain times, orders that may be pre-sent, and smoking preferences that are available. Selected options are then sent to the vendor in response to receiving user input selecting options (step **806**).

A determination is then made as to whether a confirmation is received for the reservation (step **808**). If a reservation confirmation is not received, then

reservation details are received. In this instance, some of the options selected by the user may no longer be available. In that case, a determination is made as to whether the user confirms the reservation based on the details received (step **812**). If the reservation based on the details received is confirmed, then an acknowledgement is sent to the vendor (step **814**). Then, a confirmation of the reservation is received from the vendor (step **816**) with the process terminating thereafter.

With reference again to step **812**, if a confirmation is not made, then a rejection is sent to the vendor (step **818**) with the process terminating thereafter. In this case, the user may reselect options or select a different vendor. With reference again to (step **808**), if a confirmation is received from the options sent to the vendor, the process terminates with the reservation being made for the user.

Turning next to **Figure 9**, a flowchart of a process for making a reservation for a user by a vendor is depicted in accordance with a preferred embodiment of the present invention. The steps illustrated in **Figure 9** may be implemented in a business client process, such as business client process **508** in **Figure 5**.

The process begins by receiving a reservation request with user preferences (step **900**). Thereafter, the preferences are matched with availability of resources at the vendor (step **902**). These resources include, for example, availability of seating at different times, availability of particular tables at

particular locations, whether particular orders can be filled at the time the reservation is requested, and whether a particular wait person may be available. A determination is whether a complete match for all preferences is made (step **904**). If a complete match between resource availability and user preferences does not occur, then reservation details are generated (step **906**). In generating reservation details, alternative resources may be presented in these details. For example, if a particular time requested by user, such as 7:00 p.m. cannot be met, reservation details may be generated with an alternative time, such as 7:15. These reservation details are then sent back to the user at the wireless client (step **908**).

A determination is then made as to whether an acceptance of the reservation details has been received (step **910**). If an acceptance is received, the reservation is saved (step **912**), and a confirmation of the reservation is returned to the user (step **914**) with the process terminating thereafter.

With reference again to (step **910**), if an acceptance has not been received, a determination is made as to whether a rejection of the reservation has been received (step **916**). If a rejection has not been received, a determination is made as to whether a time out has occurred (step **920**). If a time out has not occurred, the process returns (step **910**). If a time out has occured in step **920** or a rejection has been received in step **916**, the process terminates. With reference again to step **904**, if a complete match does occur, the process proceeds

to step **914** to send the confirmation with the process terminating thereafter.

Thus, the present invention provides an improved method, apparatus, and computer instructions for making reservations with one or more vendors. The mechanism of the present invention allows for users to make reservations without having to call a vendor or visit the vendor location. The illustrative embodiments provide a hot spot location in which a user with a wireless device may receive a selection of vendors. In the illustrative embodiments, the vendors are a list of restaurants. A user may select one of the restaurants to generate a request. User preferences may be sent along with the request, such as an order, a smoking preference, or even a table location. A confirmation of the reservation may be made or reservation details may be received in which some of the preferences may not have been matched. In that case, the reservation details may propose an alternative option that the user may accept or reject.

Of course, the vendors may include other businesses or organizations other than restaurants. For example, a vendor also may be a hotel, a movie theater, a sports park, or a reservation service that may make reservations for a user with different businesses or vendors.

These hot spot locations may be placed in different areas, such as buildings lobbies, airports, banks, at ATM machines, in taxis, or even in grocery stores. For businesses that are visited regularly by user, preferences may even include orders that may be selected and placed in advance. In this manner, if the user is in

a hurry or the particular order requires advance preparation, then these orders may be made and ready at the time of the user's reservation.

Further, these hot spot locations may be set up by a business or other organization, which charges the vendors listed for making reservations. In this case, the vendors may be charged per reservation or on some periodic basis. Alternatively, the customers or users in the hotspot could be charged or both the vendors and the customer or users may be charged. These hot spots may be used as an incentive to get users to come to a hot spot location. For example, a hot spot location may be set up for a shopping center in which users may use the hot spot location for free to make reservations. Further, in the implementations in which access in a hot spot location is only provided for free with respect to making reservations with vendors, free Internet access may be provided after a reservation has been made to encourage use of the hot spot location.

It is important to note that while the present invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will appreciate that the processes of the present invention are capable of being distributed in the form of a computer readable medium of instructions and a variety of forms and that the present invention applies equally regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media include recordable-type media, such as a floppy disk, a

hard disk drive, a RAM, CD-ROMs, DVD-ROMs, and transmission-type media, such as digital and analog communications links, wired or wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions. The computer readable media may take the form of encoded formats that are decoded for actual use in a particular data processing system.

The description of the present invention has been presented for purposes of illustration and description, and is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiment was chosen and described in order to best explain the principles of the invention, the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.